IN THE CLAIMS

1. (Previously Presented) A method for the spatially resolved determination of physical, chemical and/or biological properties or state variables, particularly substance concentrations, temperature, pH and/or physical fields, and/or the change in such physical, chemical and/or biological properties or state variables in an examination area of an examination object by determining a change in spatial distribution and/or mobility of magnetic particles in the examination area or in parts thereof as a function of the effect of physical, chemical and/or biological influencing variables on at least a part-area and/or in the physical, chemical and/or biological conditions in at least a part-area of the examination area, the method comprising:

a) introducing coated magnetic particles having a coating into at least part of the examination area,

b) generating a magnetic field with a spatial profile of the magnetic field strength such that there is produced in the examination area a first part-area having a low magnetic field strength and a second part-area having a higher magnetic field strength,

c) changing the relative spatial position of the first and second part-areas in the examination area or changing the magnetic field strength in the first part-area so that the magnetization of the particles is locally changed,

d) detecting signals that depend on magnetization in the examination area that is influenced by said changing, and

e) evaluating the signals so as to obtain information about change in the spatial distribution and/or mobility of the magnetic particles in the examination area,

wherein the coating is degradable and inhibits mobility of the particles.

2. (Previously Presented) A method as claimed in claim 1, wherein said changing takes place before said introducing, or said introducing and said changing are carried out essentially at the same time, and/or said changing, said detecting and said evaluating are repeated at least once.

3. (Previously Presented) A method as claimed in claim 1, wherein the examination object is a polymer material, a polymer melt, a microorganism, a plant, a plant part, a living thing or a part of a living thing.

4. (Previously Presented) A method as claimed in claim 1, wherein a degree of mobility of the magnetic particles in the examination area is determined continuously or at intervals and is correlated with a state variable or property of the examination area, the state variable including a temperature, a concentration and/or a viscosity.

5. (Previously Presented) A method as claimed in claim 1, wherein a degree of mobility of the magnetic particles in a polymer melt that is forming or curing is determined continuously or at intervals and is correlated with a degree of curing or a degree of melting of a polymer material.

6. (Previously Presented) A method as claimed in claim 1, wherein at least some of the magnetic particles have anisotropic properties.

7. (Previously Presented) A method as claimed in claim 1, wherein an effective anisotropy of the magnetic particles is great enough for a reversal of the magnetization of the magnetic particles to take place by geometric (Brown's) rotation and by Neel's rotation.

8. (Previously Presented) A method as claimed in claim 1, ~~characterized in that~~ wherein the magnetic ~~particle is a~~ particles are monodomain ~~particle~~ particles, the magnetization of the monodomain particles [[which]] is reversed by ~~means of~~ Brown's rotation and Neel's rotation.

9. (Previously Presented) A method as claimed in claim 1, wherein the magnetic particle is a hard-magnetic or soft-magnetic multidomain particle.

10. (Previously Presented) A method as claimed in claim 1, wherein the magnetic particles comprise hard-magnetic materials.

11. (Previously Presented) A method as claimed in claim 10, wherein the hard-magnetic materials comprise Al-Ni, Al-Ni-Co and Fe-Co-V alloys and also barium ferrite ($BaO\ 6xFe_2O_3$).

12. (Previously Presented) A method as claimed in claim 1, wherein the coating is degradable thermally, chemically, biochemically, by electromagnetic radiation or ultrasound and/or mechanically.

13. (Previously Presented) A method as claimed in claim 1, wherein the coating comprises polysaccharides, starch, waxes, oils, fats, glycerin, gels or plastics including thermoplastic polymers or blends thereof.

14. (Previously Presented) A method as claimed in claim 1, wherein the coating of at least some of the magnetic particles consist of at least one protein, polypeptide, antibody and/or organosilane.

15. (Previously Presented) A method as claimed in claim 1, wherein said evaluating comprises:

a) selection of a path for movement of the first part-area having a low magnetic field strength within the examination area,

b) recording of reference data by reference samples along the path according to said selection at at least one location in the case of at least two external parameters using at least a first receiving coil,

c) interpolation and/or extrapolation of the reference data recorded during said recording to points and for external parameters not recorded during said recording,

d) measurement of the path within the examination area in a sequence that is identical to that used during said recording by reference samples according to said recording via the at least first receiving coil, and

e) comparison of data obtained during said measurement with the reference data obtained during said recording and/or during said interpolation by minimizing the error square.

16. (Previously Presented) A method as claimed in claim 15, wherein after said interpolation, the reference data obtained during said recording and/or during said interpolation are converted to characteristics of at least a second receiving coil used during said measurement.

17. (Previously Presented) A method as claimed in claim 15, wherein data obtained during said comparison are assigned to a gray value for a pixel to provide images, with relative pixel intensity representing a degree of the determined external parameters.

18. (Previously Presented) A method as claimed in claim 17, wherein the images obtained are displayed in a merged image.

19. (Previously Presented) A method as claimed in claim 15, wherein a sequence of said measurement and said comparison is repeated at least once.

Claims 20 - 35. (Canceled).

36. (Previously Presented) A method as claimed in claim 3, wherein the polymer is a thermoplastic polymer or a polymer blend.

37. (Previously Presented) A method as claimed in claim 5, wherein the polymer material is a thermoplastic polymer.

38. (Previously Presented) A method as claimed in claim 13, wherein the starch is a dextrin or a cyclodextrin.

39. (Previously Presented) A method for the spatially resolved determination of physical, chemical and/or biological properties or state variables, particularly substance concentrations,

temperature, pH and/or physical fields, and/or the change in such physical, chemical and/or biological properties or state variables in an examination area of an examination object by determining a change in spatial distribution and/or mobility of magnetic particles in the examination area or in parts thereof as a function of the effect of physical, chemical and/or biological influencing variables on at least a part-area and/or in the physical, chemical and/or biological conditions in at least a part-area of the examination area, the method comprising:

a) introducing at least partially coated magnetic particles having a partial coating into at least part of the examination area,

b) generating a magnetic field with a spatial profile of the magnetic field strength such that there is produced in the examination area a first part-area having a low magnetic field strength and a second part-area having a higher magnetic field strength,

c) changing the relative spatial position of the first and second part-areas in the examination area or changing the magnetic field strength in the first part-area so that the magnetization of the particles is locally changed,

d) detecting signals that depend on magnetization in the examination area that is influenced by said changing, and

e) evaluating the signals so as to obtain information about change in the spatial distribution and/or mobility of the magnetic particles in the examination area,

wherein the partial coating is degradable and inhibits mobility of the particles.

40. (Previously Presented) A method for the spatially resolved determination of physical, chemical and/or biological properties or state variables, particularly substance concentrations, temperature, pH and/or physical fields, and/or the change in such physical, chemical and/or

biological properties or state variables in an examination area of an examination object by determining a change in spatial distribution and/or mobility of magnetic particles in the examination area or in parts thereof as a function of the effect of physical, chemical and/or biological influencing variables on at least a part-area and/or in the physical, chemical and/or biological conditions in at least a part-area of the examination area, the method comprising:

a) introducing magnetic particles into at least part of the examination area and coating at least some of the particles in the examination area with a coating,

b) generating a magnetic field with a spatial profile of the magnetic field strength such that there is produced in the examination area a first part-area having a low magnetic field strength and a second part-area having a higher magnetic field strength,

c) changing the relative spatial position of the first and second part-areas in the examination area or changing the magnetic field strength in the first part-area so that the magnetization of the particles is locally changed,

d) detecting signals that depend on magnetization in the examination area that is influenced by said changing, and

e) evaluating the signals so as to obtain information about change in the spatial distribution and/or mobility of the magnetic particles in the examination area,

wherein the coating is degradable and inhibits mobility of the particles.